

REMARKS

The application has been amended and is believed to be in condition for allowance.

Claims 1-20 were rejected as being directed to non-statutory subject matter.

Claim 21 is new and is supported by the disclosure discussed below.

More specifically, the Official Action indicates that the claims are directed to a mathematical algorithm, *per se*. The Official Action asserts that the claims do no more than solve mathematical problems or manipulate abstract ideas or concepts and are therefore non-statutory.

The Official Action recognizes that patentable subject matter includes claims that have practical application, even though they include mathematical operations. The Official Action asserts (page 2, last paragraph) that "the claims merely recite the steps of determination of at least one sequence of probability models, ..., without any practical application being recited."

The claims have been amended to have practical application.

Claim 1 now clearly recites the practical step of - a step of processing a speech signal to determine a sequence of digital data strings representing acoustic properties of the speech signal.

With respect to both claim 1 and new claim 21, reference is made to Figure 2. Step 20 concerns automatic determination of a sequence of probability models representing a given text. Sub-step 22 discloses acquisition of a symbolic representation of a given text as a graphemic representation or orthographic representation (the graphemic representation may be a text drawn up with the aid of the Roman alphabet, designated by the reference TXT in Figure 3).

Sub-step 24 determines a sequence of symbolic units of a phonological nature of a finite alphabet from the said graphemic representation (denoted by the reference U in Figure 3, is, for example, composed of phonemes extracted from a phonetic alphabet). Sub-step 24 implements a system of automatic phoneticisation using databases and permitting the breakdown of any text whatsoever on a finite symbolic alphabet.

Sub-step 26 models the sequence of phonetic units by its breakdown on a base of probability models of hidden Markov models.

With reference to specification page 10, beginning with the fifth paragraph, the inventive method further includes a step of processing a speech signal to determine a sequence of digital strings, known as acoustic strings, representing acoustic properties of a speech signal corresponding to the diction of the given text TXT.

Step 40 includes a sub-step 42 of acquisition of a speech signal, identified by the reference $s(t)$ in Figure 3 and corresponding to the diction of the given text TXT, and a sub-step 44 of spectral analysis of the digital samples of the speech signal $s(t)$ in order to deliver a breakdown of the frequency spectrum thereof. The analysis is carried out on a sliding window of the Hamming type, the result of which forms a sequence, referenced O_i^T in Figure 3, of acoustic strings or acoustic vectors referenced O1 to OT.

The alignment step relates to Figure 2 step 60, an alignment between the sequence O_i^T of acoustic strings and the sequence H_i^N of probability models. In particular, the alignment permits the selection of an optimum alignment in the Viterbi algorithm.

The confidence index step relates to step 80, determination of a confidence index of acoustic alignment for each association between a model H_n and an acoustic segment $O(H_n)$.

From specification pages 18-19, one sees that it is therefore apparent that the method according to the invention permits the definition of a confidence index with increased precision. The use of this index makes it possible in particular to automate the whole of the method of processing of a speech signal, to define automatic modifications and to obtain an

optimised result, e.g., in systems for voice synthesis or for forming learning databases for voice recognition systems.

Withdrawal of the rejection as to claims 1-20 being directed to non-statutory subject matter is respectfully requested.

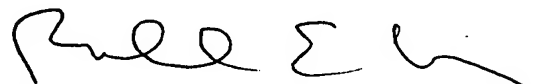
In that the claimed invention is believed to be patentable over the prior art, applicants believe that the present application is in condition for allowance and an early indication of the same is respectfully requested.

Please charge the fee of \$50 for one extra claim of any type added herewith to Deposit Account No. 25-0120.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Roland E. Long, Jr., Reg. No. 41,949
745 South 23rd Street
Arlington, VA 22202
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

REL/lrs